

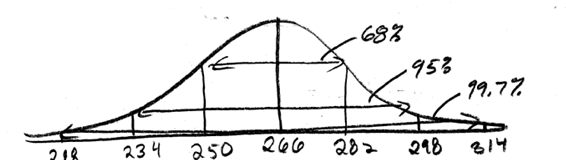
1. Male and female professional basketball players have very different average scoring statistics. Per game, men average 28 points with a standard deviation of 5 points. Per game, women average 18 points with a standard deviation of 3 points. Larry and Stacy are both basketball players. In their last games, Larry scored 37 points and Stacy scored 32. Who was actually the better scorer? Justify your answer.



Stacy did better since she scored more than 4 standard deviations above the mean for women while Larry only scored 1.8 standard deviations above the mean for men.

1. The distribution of pregnancy lengths from conception to birth for humans is normally distributed with a mean of 266 days and a standard deviation of 16 days.
   1. Sketch a picture of the distribution below. Label all standard deviations.

N(266, 16)



*Use the empirical rule (the 68-95-99.7 rule) for the problems below (draw pictures)*

* 1. What percent of all pregnancies last less than 298 days?

P(x < 298) = 97.5%

* 1. What percent of all pregnancies last at least 282 days?

P(x > 282) = 16%

* 1. What percent of all pregnancies last between 234 and 282 days?

P(234 < x < 282) = 81.5%

* 1. What percent of all pregnancies last between 218 and 250 days?

P(218 < x < 250) = 15.85%

* 1. Mr. Wheeles’s wife’s first pregnancy was in the 55th percentile. What does this mean?

The length of Mrs. Wheeles’ first pregnancy was 55% longer or the same as all pregnancies.

* 1. Find the length of the longest 16% of all pregnancies.

Above 282 days

* 1. Find the length of the middle 99.7% of all pregnancies.

Between 218 and 314 days

* 1. Find the length of the shortest 2.5% of all pregnancies.

Below 234 days

* 1. Find the length of the middle 95% of all pregnancies.

Between 234 and 298 days

* 1. What z-score does a pregnancy of 257 days have?



* 1. A z-score of 2.8 corresponds to what pregnancy length?



*Use the calculator functions for the following problems. (It might help to draw pictures)*

* 1. What percent of humans have a pregnancy lasting less than 257 days?

P(x < 257) = 28.69%

* 1. What percent of humans have a pregnancy lasting longer than 280 days?

P(x > 280) = 19.08%

* 1. What percent of humans have a pregnancy lasting between 260 and 270 days?

P(260 < x < 270) = 24.49%

* 1. How long would a pregnancy have to last to be in the longest 10% of all pregnancies?

P(X > A) = 10% OR P(X < A) = 90%

invNorm(0.90, 266, 16)

A = 286.5 days

* 1. How short would a pregnancy be to be in the shortest 25% of all pregnancies?

P(X < B) = 25%

invNorm(0.25, 266, 16)

B = 255.2 days

* 1. How long would a pregnancy be to be in the middle 20% of all pregnancies?

P(X < A) = 40% P(X < B) = 60%

invNorm(0.40, 266, 16) invNorm(0.60, 266, 16)

A = 261.9 days B = 270.1 days

Between 261.9 and 270.1 days

* 1. What percentile is a pregnancy of 258 days?

P(x < 258) = 30.85%

31st Percentile

* 1. What percentile is a pregnancy of 298 days?

P(x < 298) = 97.72%

98th Percentile

* 1. What pregnancy length corresponds to the 3rd quartile?

P(X < Q3) = 75%

invNorm(0.75, 266, 16)

Q3 = 276.8 days

* 1. Find the IQR.

P(X < Q1)= 25% P(X < Q3) = 75%

invNorm(0.25, 266, 16) invNorm(0.75, 266, 16)

Q1 = 255.2 days Q3 = 276.8 days

IQR = 276.8 – 255.2 = 21.6 days

1. What would be the mean of a Normal distribution with a standard deviation of 8 in which 43% of the distribution is less than 84?

z = invNorm(0.43) = -0.176



1. What would be the standard deviation of a Normal distribution with a mean of 24 in which 67% of the distribution is more than 17.5?

z = invNorm(0.33) = -0.440



Multiple Choice Answers

1. B
2. E
3. A
4. C
5. C
6. B
7. D
8. A
9. C
10. C
11. C
12. B
13. D
14. C
15. B
16. D
17. C
18. B